

New York City
Department of Health & Mental Hygiene
Bureau of Environmental Disease Prevention

Linking pesticide hazard, exposure and health outcomes data in New York City:
Early report on the development of a tracking system

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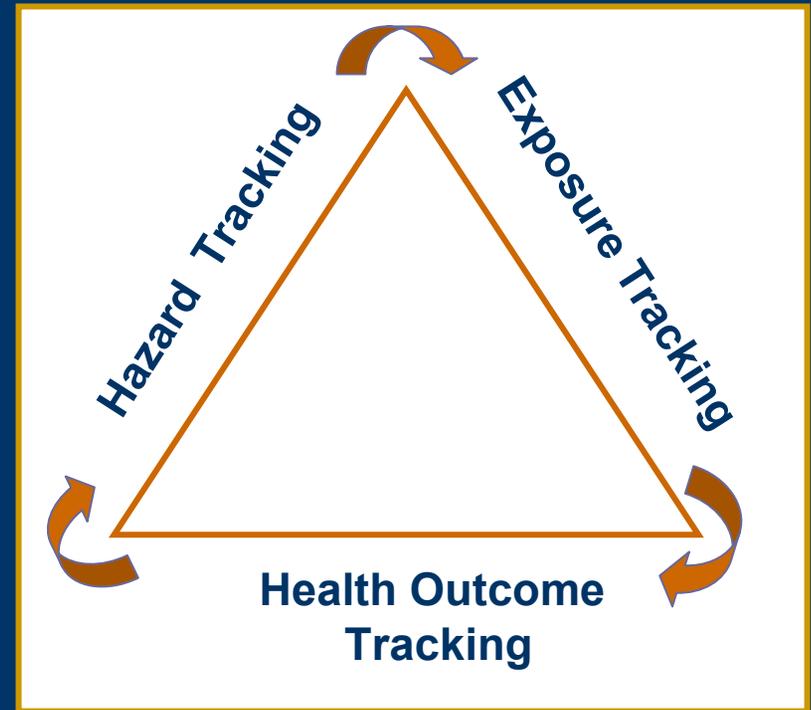
Environmental Connections: the New York City EPHT Program

- Environmental Public Health Tracking Part A Capacity Building Grant
 - Fiscal Years 2003-2005
- Environmental and Health Effects Tracking Demonstration Grant
 - Fiscal Years 2004-2006
 - Pesticides
 - Heavy Metals

What is “Environmental Tracking”

“The ongoing collection, integration, analysis, interpretation and dissemination of environmental hazard, exposure and health effects data”

(Source: Pew Environmental Commission)

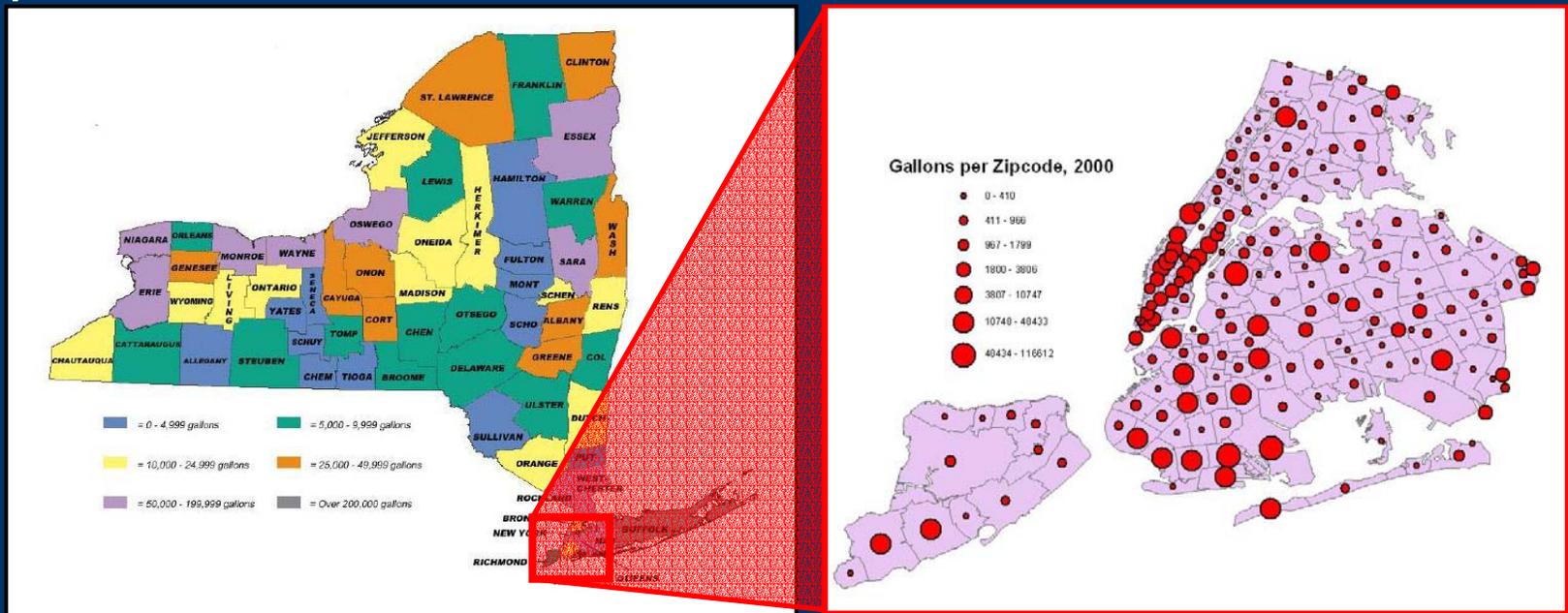


Status and Limitations of Current Pesticide Surveillance

- Five states require extensive use reporting (CA,NH,NY,OR,MA)
- Some states require limited record keeping, limited public access (e.g., NJ, AZ, CT, MO, TX). Most states require none.
- Health outcome surveillance largely limited to Poison Control Cases. Often includes uncertain endpoints, extreme cases.
- Limited utility of occupational surveillance for urban populations.
- Urban residential exposure data limited to specific studies.
- Most pesticide indicators of interest have insufficient data for national or state surveillance (US EPA '02, "State of the Environment")

Why Track Pesticides in NYC? (1)

- NYC accounts for majority of all commercially applied pesticides in NYS.



Source: NYS Department of Environmental Conservation

Why Track Pesticides in NYC? (2)

- Significant proportion of commercial pesticides are applied in homes.
- Epidemiological evidence of risks at exposure typical in homes (e.g., Perera et al., Env Health Persp, Feb. 2003.)
- NYC DOHMH is working with other agencies to test and adopt safer pest control practices.
- Little current understanding of where, how and why pesticides are used
- Gather evidence to promote protective policies, regulations, educate the public

How Will NYC's Pesticide Tracking Differ from Surveillance and Research?

- Not focused on occupational hazards/exposures
 - Little or no opportunity for longitudinal study
 - Health effects expected to be primarily sub-clinical, unmeasured, or requiring long-latency
 - Conditions of “non-exposure” uncontrolled or unknown
- Data almost exclusively cross-sectional
- Data largely secondary. Little control over its collection or quality
- Large urban area enables interesting links, varied ecological hypotheses

Major Subjects of Analytic Exploration

- Predictors of personal use and commercial application of pesticides
- Trends in use/application of pesticides
- Do hospitalizations represent the “tip of the iceberg”?
- Relationship among use, exposure and outcomes

Linkage and Data Integration Levels

- Individual
- Residence
- Geographic areas
- Temporal

Linkages: Individual Level Data

- Poison Control – NYC Poison Control Center
- Hospitalizations – NYS SPARCS
- Emergency Department Utilization – NYS SPARCS, Quarterly Chart Reviews in 23 NYC E.R.
- Syndromic Surveillance
 - 911
 - Emergency Medical System Response
- NYC Health and Nutrition Examination Survey

Linkages: Data Describing Buildings and Residences

- Pesticide Application – NYS Pesticide Application Registry
- Housing Conditions – complaints, violations, local lead law enforcement, building codes enforcement, size, occupancy
- Housing Finance – ownership, rent regulation status, housing value

Linkages: Neighborhood Level Data and other Geographies

- Pesticide use – area applications (e.g., West Nile Virus prevention)
- Health outcomes – Community Health Survey, Ambulatory Care Survey, Prescription and Pharmacy Data
- Infestation – CHW, Housing Vacancy Survey
- Housing conditions – Complaints, Violations, Local Lead Law enforcement, building codes enforcement
- Pesticide sales – NYS Pesticide Sales Registry
- Census and vital statistics

Challenges – Data Quality

- Myriad Sources of Data
 - Municipal Agencies (5)
 - State Agencies (5)
 - Federal Departments (2-4)
 - Original Data Collection (3)
- Unknown Quality

Complexities of Pesticide Tracking

- Managing multiple confidentiality rules, data use agreements
 - Health record confidentiality
 - Pesticide applicator confidentiality
 - Small geographic area reporting limitations
 - Raw data release limitations
- Stakeholders with conflicting reporting interests, agendas

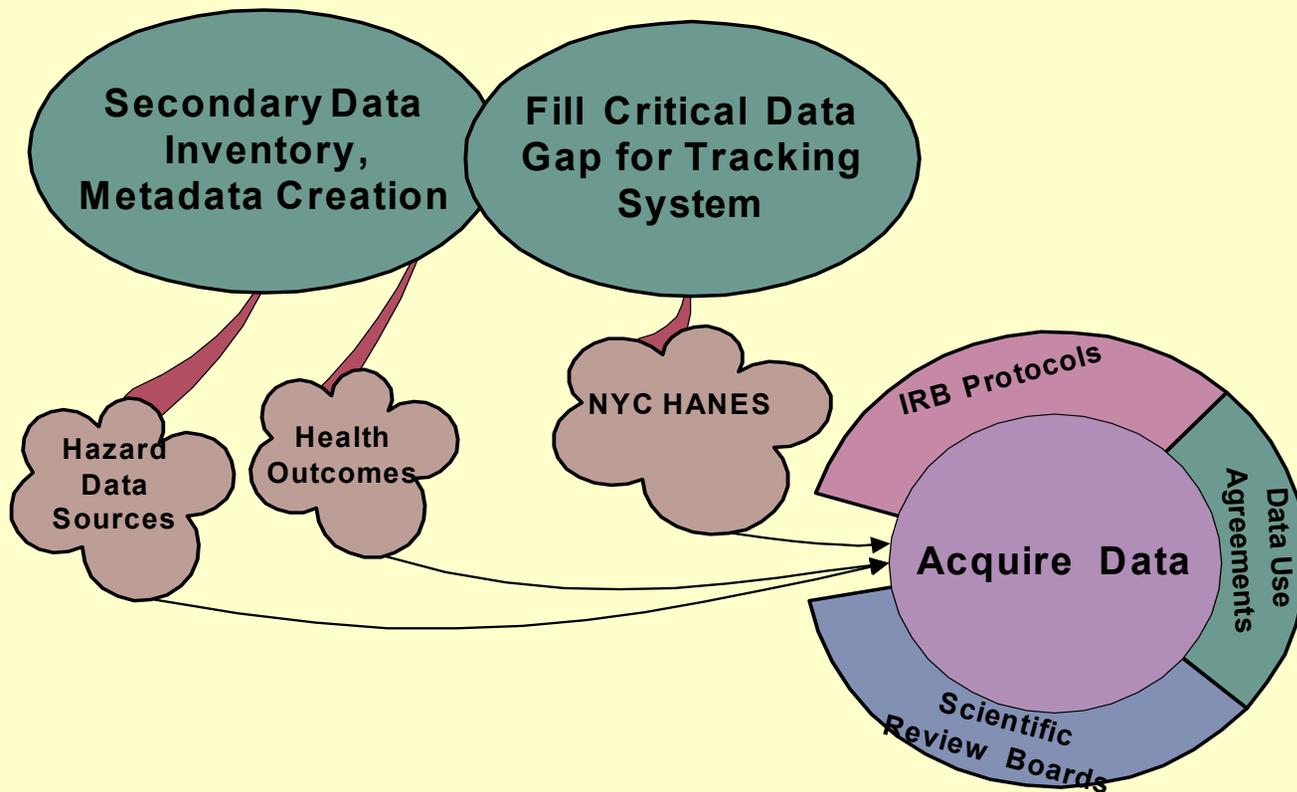
Complexities of Tracking (cont'd)

- Data architecture
 - Warehousing
 - Analytic software
 - Multiple access and security rules
 - Linkage technologies learned in private industry difficult to transfer to public institutions
- Methodological complexities
 - Ecological associations
 - Random effects
 - Geospatial resolution

NYC's Pesticide Tracking Implementation Plan

- Stakeholders Workgroups
- Data Acquisition
- Data assessment, evaluation
- Indicator Development
- Network Architecture Development
- Reporting, Data Mining
- Security Assessment for Public Access

Data Inventory and Acquisition



Data and Metadata Inventory

XMLForm - Cocoon Feedback Wizard - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media History Mail Print Edit Discuss

Address D:\Document\EPHT\Data Inventory\Revised Joint Inventory\page1.htm Go

Joint Citywide Data Set Survey

NYC Health
New York City
DoITT
GIS Utility

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* required items

1. Organization and Contact Information

Organization information

1.1 Agency:*

1.2 Division:

1.3 Organization type:*

- NYC Government
- NYS Government
- NYS County - non-NYC
- Federal Government
- Regional Agency or Authority
- Utility Organization
- Academic/Research Institution
- Not-for-Profit Organization
- Private Company
- Other

[Select one](#)

If Other, please specify:

1.4 Legal or program basis:

- City Ordinance or Code
- State Statute or Regulation
- Federal Statute or Regulation
- Executive Order (i.e., Mayor, Governor)
- Formal Department Policy or Procedure
- Contract or Grant-based Program
- Other

[Please check all that apply](#)

If Other, please

Done My Computer

Organization &
Contact Information

Dataset Description

Spatial Data
Description

System Architecture

Data Distribution

Enhancements
Planned

Data Assessment & Evaluation

- Ease, timeliness frequency of availability
- Data completeness
- Data utility
- Face validity

Indicator Development

- Examples of Programs with Pesticide Indicators
 - CDC-NIOSH SENSOR
 - Toxic Exposure Surveillance System (TESS)
 - Environmental Protection Indicators for California, Office of Environmental Health Hazard Assessment
- Examples of Indicators for NYC Possible with Anticipated Data:
 - Pesticide use volumes in NYC by toxicological and environmental impact categories and by building type (dwelling, commercial, etc.)
 - Percent of NYC residents reporting use of illegal and highly toxic pesticides.

Network Architecture

- Source database storage
- Metadata
- Extraction, Transformation & Loading Platform
- Data Warehouses
- Analytic Interfaces
- Security Architecture

How Tracking Will be Used

- Working Papers
- Launch general educational and environmental interventions
- Prioritize inspections
- Select geographic areas for resource allocation
- Evaluate program efficacy
- Policy and Intervention Recommendations
- Make data available for health outcomes research, possible public portal to data